

I. BACKGROUND

States with areas that do not meet health-based federal air quality standards are required by the federal Clean Air Act to develop State Implementation Plans (SIPs) describing how and when the State will attain the standard. For motor vehicle-related pollutants (such as nitrogen oxides, hydrocarbon, and carbon monoxide), the SIP also sets a “budget” of emissions from on-road motor vehicles for transportation agencies to show “conformity.” The Clean Air Act requires transportation agencies to make affirmative findings that their transportation programs “conform” to the SIP. This means that motor vehicle emissions with the planned transportation projects in place must be within the budget in order to receive federal funding.

A. History of Smog Check in California

In the 1977 amendments to the Clean Air Act, Congress required areas that did not attain the ambient air quality standards by 1982 to implement inspection and maintenance (I/M or Smog Check) programs to reduce emissions from in-use cars and light trucks. The California Legislature refused to authorize the original Smog Check program and in December 1980, California was sanctioned under the Clean Air Act. Over \$800 million in federal support for new highway and sewer projects was delayed for over two years. In 1982, the Legislature approved a Basic Smog Check program for the portions of the State with the most serious air quality problems, opting for a program based on inspections at privately-owned inspection stations (a “decentralized” program) that would meet the U.S. Environmental Protection Agency (U.S. EPA) targets for hydrocarbon and carbon monoxide reductions. The State Department of Consumer Affairs’ Bureau of Automotive Repair (BAR) was charged with implementing the Smog Check program.

In the 1982 legislation, the Legislature also created the California I/M Review Committee and charged the Committee with analyzing the effect of the program on vehicle emissions and air quality. The I/M Review Committee is an advisory group, whose functions pertain primarily to gathering, analyzing and evaluating data. In its current form, the Committee’s 13 members are appointed by the Governor, the Senate Committee on Rules, and the Speaker of the Assembly, for four-year terms. The Health and Safety Code (H&S Code) requires the appointees to include an air pollution control officer, an air quality expert, an economist, a social scientist, representatives from the I/M industry, a representative from a stationary source of emissions, an environmentalist, a representative from an agency charged with prosecuting violations of the I/M laws, and members of the public.

In the 1990 amendments to the Clean Air Act, Congress required ozone nonattainment areas classified as serious, severe, or extreme to implement an *enhanced* I/M program in certain urban areas. In California, these nonattainment areas are the San Joaquin Valley, San Diego County, the Sacramento Region, Ventura County, the Southeast Desert, and the South Coast. The U.S. EPA’s regulations implementing the Clean Air Act specify a “model” enhanced program based on

centralized stations that do not repair vehicles (also known as “Test-Only” stations) and testing on a transient cycle (known as the IM240 transient cycle) using a treadmill-like device called a dynamometer, which allows emissions of nitrogen oxides to be measured. Because of the extensive network of existing Smog Check stations in California, the Legislature did not initially approve this type of enhanced program. A compromise was reached with the U.S. EPA, and in 1994, the Legislature approved a redesign of the program in three urgency bills (AB 2018 Katz, Chapter 27; SB 198 Kopp, Chapter 28; SB 52 Presley, Chapter 29). This new program was known as Enhanced I/M or Smog Check II.

B. History of the 1994 Ozone SIP

On November 15, 1994, California submitted to the U.S. EPA a comprehensive SIP, detailing how six areas of the State would attain the one-hour federal ozone standard by the statutory deadlines. The 1994 SIP – a joint effort between the Air Resources Board (ARB or Board), local air districts, and local transportation agencies – combines State commitments to reduce emissions from mobile sources, consumer products, and pesticides with local regulations for stationary and area sources, and assignments to the federal government to reduce emissions from sources under exclusive or practical federal authority.

Enhanced I/M is a critical element of the 1994 SIP because it represents 25 percent of the emission reductions needed to show attainment or rate of progress in 1999. Although California has achieved significant emission reductions by tightening new motor vehicle standards, relatively slow fleet turnover means that stricter standards reduce emissions slowly. For areas with early attainment dates (such as Sacramento and the San Joaquin Valley), Smog Check provides critical, near-term emission reductions from the on-road fleet, ensuring that those vehicles stay clean as they age.

At the time ARB was preparing the 1994 SIP, BAR was developing regulations to implement the Smog Check II legislation. Because of uncertainty surrounding the ultimate design of the program, ARB staff estimated the benefits of the Enhanced Smog Check program for the SIP based on U.S. EPA’s performance requirements. ARB staff plugged assumptions about the Smog Check II program into the motor vehicle emissions model used in the SIP to develop these estimated benefits – 112 tons per day (TPD) of emission reductions in 1999. These estimates were submitted as part of the SIP on November 15, 1994. However, the regulations to enact the Smog Check II program had not yet been adopted.

Attainment Dates

1994 Ozone SIP Areas

1999

San Diego County
(San Joaquin Valley*)

2005

Ventura County
Sacramento Region
San Joaquin Valley*

2007

Southeast Desert

2010

South Coast

* San Joaquin Valley did not attain by 1999 and a new SIP with a 2005 attainment date is required.

In 1995, BAR pursued emergency rulemaking to adopt Smog Check II regulations. As the designated air quality agency in California, ARB submitted the emergency regulations to U.S. EPA on June 30, 1995. As required under State law, BAR subsequently promulgated the Smog Check II regulations through a normal rulemaking process, with additional opportunities for public comment. ARB submitted the final Smog Check II regulations to U.S. EPA on January 22, 1996. Both of these regulatory packages included estimates of the emission reductions associated with Smog Check II; however, California's legal commitment is based on the original SIP estimate of 112 TPD of emission reductions.

On September 25, 1996, U.S. EPA signed a notice to approve California's 1994 Ozone SIP, including the Smog Check program, for the six SIP areas. The approval was published in the Federal Register on January 8, 1997 and became effective on February 7 of that year. The approved SIP assumes a total of 112 TPD of emission reductions as shown in Table I-1. However, the commitment does not require California to implement the exact program specifications assumed in the 1994 SIP – simply to achieve the tons. The SIP approval notice called for the Smog Check II program to be operational within 12 months.

Table I-1
Emission Reductions Assumed in the 1994 Ozone SIP from Enhanced I/M
Tons per Day in EMFAC7F for 1999

Area	HC	NOx	Total
South Coast ¹	34.8	32.4	67.2
Southeast Desert (Coachella and Antelope)	2.4	2.3	4.7
Ventura County	1.6	1.9	3.5
Sacramento Region	5.4	5.7	11.1
San Joaquin Valley	4.3	5.0	9.3
San Diego County ²	9.3	7.3	16.6
Total	57.8	54.6	112.4

¹ U.S. EPA has approved a revision to the South Coast SIP which relies on a new emission model, however, the revision is not yet effective.

² San Diego relied on Enhanced I/M only as a contingency measure.

C. Transportation Conformity

The Clean Air Act requires metropolitan planning organizations (MPOs) to make affirmative findings that transportation programs “conform” to the applicable SIP to receive federal funding. When a SIP is submitted, U.S. EPA must assess whether the on-road motor vehicle “budget” is adequate. Once the budget is deemed adequate, MPOs must show that even after new transportation plans or projects are implemented, motor vehicle emissions remain within the budget.

Conformity assessments must use the most recent information, including the actual effectiveness of measures such as Smog Check II, to project emissions if the new transportation program is implemented. All transportation agencies rely on the SIP commitments. If measures fail to deliver the expected emission reductions, higher emissions result. If the total projected emissions exceed the budget in the SIP, conformity “lapses.” A lapse prohibits federal funding for projects that increase highway or road capacity, and may also delay public transit improvements.

D. “1994 SIP Currency”

To estimate the emission reductions from on-road motor vehicles, ARB and other air quality agencies use models that simulate emissions from the entire vehicle fleet. The 1994 SIP was based on a version of California’s emission model known as EMFAC7F. The emission inventories, the expected emission reductions and, ultimately, the attainment demonstrations in the 1994 SIP are based on EMFAC7F. Once U.S. EPA approved the 1994 SIP, the inventories and assumptions in the SIP became the legal benchmark. Thus, to determine whether California is meeting its legal Smog Check II commitments, we must evaluate the program in “1994 SIP currency.” This means that we must apply the benefits of the current program to the SIP-approved EMFAC7F inventory to provide an “apples to apples” comparison to the 112 TPD SIP commitment for 1999.

Although ARB has significantly improved the motor vehicle emissions model since 1994, we cannot use our 1996 model (known as EMFAC7G) to assess 1994 SIP commitments. Because the attainment demonstrations in the 1994 SIP are based on EMFAC7F inventories, substituting the higher EMFAC7G inventories would invalidate the attainment demonstration. To use EMFAC7G, California would need to prepare a comprehensive SIP revision to revise the emission inventories, expected emission reductions, and attainment demonstrations.

In 1997, the South Coast Air Quality Management District prepared a comprehensive SIP revision using EMFAC7G. This plan was modified slightly in 1999 and submitted to U.S. EPA as a SIP revision. On April 10, 2000, U.S. EPA published approval of the revised 1999 SIP. We have provided new conformity factors to the Southern California Association of Governments in the currency of the 1999 SIP for use in conformity finding this summer.

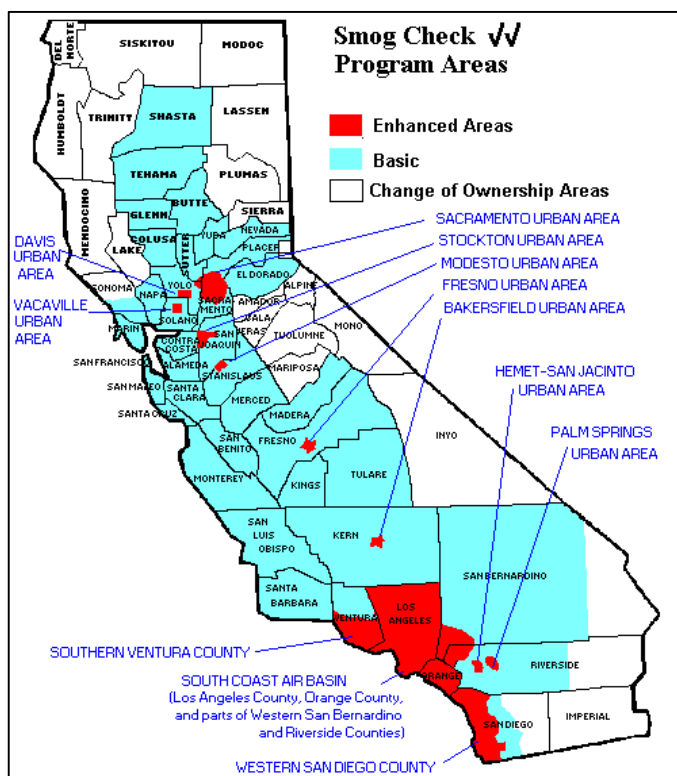
ARB is continually improving the motor vehicle emission model. We expect to bring the next generation of this model, known as EMFAC2000, to the Board for consideration this Spring. EMFAC2000 is the culmination of over ten years of effort to refine and improve the on-road motor vehicle emission inventory. Updates to the driving cycles, emission factors, and vehicle population will change our estimates of hydrocarbon, carbon monoxide, and nitrogen oxide emissions from on-road motor vehicles. Once approved by the Board, EMFAC2000 will form the basis for future SIP revisions, including revisions to the one-hour ozone SIPs for the South Coast Air Basin and the San Joaquin Valley in 2001.

E. 1997 Legislative Changes

Responding to citizen complaints about the Enhanced I/M program, in 1997, the Legislature passed bills to make Enhanced I/M more consumer friendly. The legislation, which was signed by the Governor, exempted pre-1974 vehicles from Smog Check, exempted new vehicles from their first two Smog Checks, allowed waivers for the dirtiest vehicles, repealed annual inspections for certain vehicles, and reduced the repair cost limit.

Today, the type and frequency of Smog Check inspections vary throughout the State, depending upon the severity of the air pollution problem in each area. There are three different levels of I/M programs. In order of increasing stringency, these program levels are "Change of Ownership," "Basic," and "Enhanced." The Enhanced I/M program is now being implemented in urban areas with high levels of ozone or carbon monoxide, as mandated by the Clean Air Act and State law.

The Enhanced Smog Check program targets the dirtiest vehicles (which greatly exceed emission standards and are responsible for a significant portion of emissions from cars) for inspection at Test-Only stations. By selecting the dirtiest vehicles for special testing, California's Enhanced program was designed to satisfy federal requirements while minimizing inconvenience for most California drivers. A small percentage of randomly selected vehicles were also to be sent to Test-Only stations to help measure the effectiveness of the program. We are currently directing over 15 percent of vehicles to the Test-Only stations to ensure that at least that many are actually inspected at those facilities. Most vehicles in the Enhanced areas are subject to "loaded mode" testing on a treadmill-like device called a dynamometer, which allows emissions of nitrogen oxides to be measured.



F. Reporting Requirements

We expect that the final version of this report will satisfy multiple analysis and reporting requirements:

- Under the National Highway System Designation Act, Congress provided states with greater flexibility to design their own I/M programs. States were allowed to make a “good faith” estimate of emission reductions associated with their Smog Check program for SIPs. Congress also established U.S. EPA “interim” approval of good faith estimates for 18 months, at which time the state was required to submit an equivalency evaluation to obtain final approval. California’s report under the Highway Act was due in August 1998 (18 months after the February 1997 approval). The *Interim Short-Term Equivalency Demonstration of the California Enhanced Smog Check Program* was transmitted to U.S. EPA on December 1, 1998. Because no actual data from the Enhanced program were available at the time, California only evaluated the program design and promised to update the report to include at least six months of enhanced program data. This report will fulfill the requirement to provide that program data.
- State law (H&S Code 44021(e)) requires ARB, in cooperation with the Bureau of Automotive Repair, to assess the impact of continuing the new car exemption and an evaluation of whether the Smog Check program is meeting our SIP commitment. The first report was due January 1, 2000, with subsequent reports due every three years. Once finalized, this report will fulfill the first reporting requirement.
- U.S. EPA’s final I/M rule (40 CFR 51.353(c)) also includes program evaluation requirements. States are required to report every two years, beginning two years after the initial start-update of the program. The SIP approval notice required Smog Check II program start-up to occur within 12 months after approval – by February 1998. Thus, this program evaluation was due to U.S. EPA in February 2000. Once finalized, this report will fulfill this commitment.
- Under H&S Code Section 44021(b), the I/M Review Committee is required to report to the Legislature at least once every 12 months on the performance of the program and recommendations for program improvements. The Committee’s 2000 report is expected in May.